

APPLICATION

of

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for

UNITED STATES LETTERS PATENT

on

ROTATABLE HAIR BRUSH

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Sheets of Drawings: Seven (7): Figs. 1-11

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This invention relates to rotatable hair brushes. More particularly, the invention relates to rotatable hair brushes which prevent a user's hair from becoming entangled in the brush during the operation of the brush in brushing the user's hair.

BACKGROUND OF THE INVENTION

5 *Sub A*
10 Women have discovered through the years the benefits of brushing their hair to
15 enhance the appearance of their hair. For years, women have stroked their hair manually to
20 arrange their hair neatly and to enhance the sheen of their hair. In brushing their hair manually,
25 women have tended to turn the brush partially so that the bristles in the brush move through the
30 hair. Generally, the rotation of the brush has been limited to about one-half ($\frac{1}{2}$) of a revolution.
35 The user has then removed the brush from the user's hair. The rotation of the brush is limited to
40 about one-half ($\frac{1}{2}$) of a revolution because rotations greater than one-half ($\frac{1}{2}$) of a revolution
45 tend to entangle the user's hair. The user has then moved the brush to a new position in the
50 user's hair and has repeated the process described above.

15 When the user manually brushes the user's hair, the user has obtained certain
20 advantages. One advantage has been that the positioning of the hair strands has become
25 controlled so that the appearance of the hair has become styled rather than tangled or disheveled.
30 Another advantage has been that oil near the surface of the user's scalp has become distributed

throughout the length of the hair strands. This has tended to enhance the sheen and attractiveness of the user's hair.

5 A manual rotation of a hair brush has certain significant disadvantages. It is time consuming. Furthermore, the hair brush has been removed from the user's hair after each rotation of the hair brush through approximately one-half ($\frac{1}{2}$) of a revolution. The next one-half ($\frac{1}{2}$) of a revolution of the hair brush has not then been at the previous one-half ($\frac{1}{2}$) of a revolution of the hair brush. This has prevented the user's hair from being as tidy, or lustrous, as the user would have otherwise preferred.

10 It has been known for some time that a motor-driven rotation of a hair brush might be advantageous over a manually rotatable hair brush in enhancing the appearance of a user's hair. A number of attempts have been made in the past to provide a rotatable hair brush which will operate upon a user's hair without entangling the user's hair. These attempts have not been entirely satisfactory.

15 Patent No. 6,098,635 has been issued on to Claudio Marino on August 8, 2000 for a Motorized, Rotating Hair brush and has been assigned of record to an entity which has licensed the patent to the assignee of this patent application. Patent 6,098,635 discloses and claims rotatable hair brushes which enhance the appearance of a user's hair without entangling the hair.

The rotatable hair brush in patent 6,098,635 includes a core with a plurality of series of openings, each series being displaced from adjacent series. Bristles are disposed in the openings in each series. A plurality of dividers are provided each disposed in the space above the core and between adjacent series of bristles. When the core and the dividers rotate, the dividers prevent
5 the user's hair from being entangled in the brush.

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BRIEF DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

A rotatable hair brush includes a core with a plurality of series of holes, each series displaced in an annular direction from the other series. Bristles are disposed in the holes. Dividers are disposed on the core between successive series of bristles. A support member holds the dividers. Detents on the support member, and on an end cap at the other end, and matching detents on the core retain the core fixedly relative to the dividers. A handle extending from the other end of the core and the dividers holds a battery and a motor for rotating the core and the dividers.

The end cap and the portion of the handle adjacent the end cap are shaped to provide a smooth continuous surface (preferably concave) for preventing a user's hair from becoming entangled during the brush operation. An end cap covering the support member has a smooth continuous surface to prevent the user's hair from becoming entangled during the brush operation. This smooth continuous surface may follow the contours of the dividers and may be concave in the distances between the dividers.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

Figure 1 is a perspective view of a rotatable hair brush and a support base for the hair brush with the hair brush disposed in the support base, the rotatable hair brush constituting a preferred embodiment of the invention;

Figure 2 is a front elevational view of the hair brush and the support base with the hair brush disposed in the support base;

Figure 3 is a side elevational view of the hair brush and the support base, as seen from the left side, with the hair brush disposed in the support base;

Figure 4 is a rear elevational view of the hair brush and the support base with the hair brush disposed in the support base;

Figure 5 is a top plan view of the hair brush and the support base with the hair brush disposed in the support base;

Figure 6 is a bottom plan view of the hair brush and the support base with the hair brush disposed in the support base;

Figure 7 is a side elevational view of the hair brush and the support brush, as seen from the left side, with the hair brush removed from the support base;

Figure 8 is a perspective view of the hair brush and the support base, with the hair brush removed from the support base and with the hair brush partially exploded, to show the internal construction of the hair brush;

Figure 9 is a perspective view of the handle portion of the hair brush with the handle
5 portion exploded;

Figure 10 is a sectional view in a longitudinal direction of the handle portion of the hair brush; and

Figure 11 is a perspective view of the support base for the hair brush as seen from a position above and in front of the support base.

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DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

A preferred embodiment of the invention is shown in Figures 1-11. The preferred embodiment includes a rotatable hair brush generally indicated at 10 and a support base generally indicated at 12. The rotatable hair brush 10 includes a core 14 (Figure 8) preferably having a cylindrical configuration and preferably made from a suitable plastic material such as ABS or polypropylene.

A plurality of series or rows of holes 16 (Figure 8) are disposed in the core 14. The holes 16 in each series are preferably spaced from one another in an axial direction but other configurations such as a spiral configuration may be provided for the disposition of the holes in each series. This is shown in Figure 5 of U.S. Patent No. 6,098,635 issued to Claudio Marino on August 8, 2000 for a Motorized, Rotating Hair Brush and licensed to the assignee of record of this application. Each series of holes 16 in the plurality are preferably spaced in an annular direction from adjacent series of holes in the plurality by a particular rotational angle. The number of the series or rows of holes in the plurality may vary. For example, Figure 2 of Patent 6,098,635 shows twelve (12) series or rows of holes 16; Figure 12 of Patent 6,098,635 shows fifteen (15) series or rows of holes; and Figure 13 of Patent 6,098,635 shows eight (8) series or rows of holes. Preferably the number of the series or rows of the holes 16 is three (3), each spaced by an angle of 120 degrees from the others.

SUB A3

Bristles 18 (Figs. 1-4, 7-8) are fixedly disposed at their roots in the holes 16. The bristles may have a tubular configuration and may have substantially identical lengths. The bristles 18 may preferably be made from a suitable material such as nylon but a number of other materials are also quite satisfactory. The bristles 18 may be provided with resilient properties so that they can be bent relative to the surface of the core 14 as a fulcrum and can be returned to their unstressed position after the bending has been relieved.

SUB A3

A divider generally indicated at 20 (Figure 8) is provided for association with the core 14 to prevent the user's hair from becoming entangled when the core and the dividers are rotated and the brush is applied against the user's hair during such rotation. The divider 20 may preferably be made from a material such as ABS or polypropylene. These materials are desirable for use as the divider 20 because they facilitate the movement of oils substantially uniformly from the user's scalp and from the portion of the hair strands close to the scalp to the outer ends of the hair strands. The oils also help to draw out and smooth each strand of the user's hair.

The dividers 20 have a substantially cylindrical configuration. Each of the dividers 20 is provided with a convex cut-out 22 at its radially inner end so as to conform to the cylindrical configuration of the core 14. In this way, each divider 20 can form a snug relationship with the core 14 along the convex cut-out 22 in the divider. Each of the dividers 20

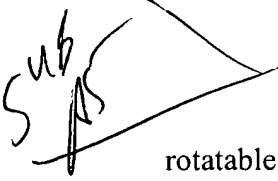
is disposed in the annular direction approximately equidistant from the series or rows of bristles 18 on the opposite sides of the divider.

Sub A1
As indicated in Patent 6,098,635, the number of the rows or series of the bristles 18 in the core 14 is optimally three (3). Furthermore, the number of the dividers 20 is optimally three (3). The dividers 20 can be considered as defining a triangle at their apices 24 in Figure 8. As the core 14 and the dividers 20 rotate, the dividers "kick" the user's hair outwardly to prevent the hair from being entangled in the brush. This outward movement of the hair counteracts the tendency of the core 14 to move the hair inwardly. This provides for the bristles 18 to engage the hair strands and separate the hair strands and brush the hair strands as the core 14 and the dividers 20 rotate. The curved configuration of the dividers 20 also provides for the dividers to contact the hair and shape and add smoothness and volume to the hair.

Sub A1
As shown in Figure 8, a support member 30 is suitably mounted as by a collar 32 on the dividers 20. The collar 32 preferably extends in a smooth configuration around the outer peripheries of the dividers 20 in a close fit relationship with the dividers. The collar 32 has a smooth configuration, preferably in a concave configuration 34, between the dividers 30. The support member 30 has a socket 36 at a central position in the support member. The socket 36 may have a unique (e.g. triangular) configuration to mate with a lug 38 having a corresponding configuration at the adjacent end of the core 14. The socket 36 and the lug 38 may constitute

female and male detents in which the lug fits tightly into the socket to retain the core 14 in a fixed relationship with the dividers 20. An end cap 39 (Figure 8) is disposed in a tight fit on the collar 32. The end cap 39 has a peripheral configuration corresponding to the peripheral configuration of the collar 32. The end cap 39 is provided for aesthetic purposes and also to prevent the user's hair strands from becoming entangled in the hair brush 10 when the hair brush is rotating and is applied to the user's hair.

An end cap 40 (Figure 8) is disposed at the opposite ends of the core 14 and the dividers 20 and may be provided with a peripheral configuration corresponding to that of the support member 30 (e.g. somewhat triangular but with a smooth configuration). The end cap has depressed portions 42 to receive the dividers 20 and has a socket 44 corresponding in configuration to the socket 36 to receive a detent corresponding to the detent 38. The end cap 40 thus provides a support for the core 14 and the dividers 20. The end cap 40 has a peripheral configuration 46 which provides a close fit with the dividers 20. This periphery includes a smooth configuration 47 (preferably concave) between the adjacent pairs of the dividers. In this way, the end cap 40 has a smooth configuration around its periphery corresponding to the smooth configuration of the collar 32. This is advantageous for reasons which will be described in detail subsequently.

Sub  A handle generally indicated at 50 (Figures 8-10) forms a stationary part of the rotatable hair brush 10. The handle 50 is shown in an exploded view in Figure 9. It includes a pair of husk members 52 of like construction. The husk members 52 define a central chamber 54 when the two husk members are attached to each other by pins 56. Decorative wings 58 are attached to the husk members 52 as by clips 60. A housing 62 (Figures 9 and 10) is disposed in the central chamber 54. The housing 62 is divided into two (2) axially spaced compartments by a spacer 64. A motor 66 (Figure 9) is disposed in the compartment closest to the hair brush 10 and a battery 68 is disposed in the other compartment.

Switches 70 and 72 (Figures 2 and 10) are disposed in cavities in the husk members 52. The switch 70 has three (3) positions. In an intermediate position, the switch 70 is open and prevents the motor 66 from being energized. In a second position to one side of the intermediate position, the switch 70 causes the motor 66 to rotate at a first speed. In a second position to the opposite side of the intermediate position, the switch 70 causes the motor 66 to operate at a second speed greater than the first speed. The switch 72 has two (2) positions. In a first position, the switch 72 causes the motor 66 to rotate in a first direction. In a second position, the switch 72 causes the motor 66 to rotate in a second direction opposite to the first direction. A drive member 74 (Figure 8) extends from the motor 66 to an opening in the core 14 to rotate the core and the dividers 20 in accordance with the rotation of the motor.

5 The housing 62 is provided with a smooth peripheral configuration 78 (Figures 8-10) at the position adjacent the core 14 to prevent the user's hair from being entangled in the hair brush as the core 14 and the dividers 20 rotate. Preferably this configuration is concave such that the diameter of the housing 62 progressively decreases with progressive positions toward the core and the dividers and then progressively increases at further positions toward the core and the dividers. At positions 80 adjacent the core 14 and the dividers 20, the diameter of the housing 14 is substantially constant.

10 The dividers 20 are fixedly positioned relative to the core 14 in an optimal relationship with the core. This results from the fact that the core 14 and the dividers 20 are fixedly positioned relative to one another by their attachments to the support member 22 and the end cap 40. As previously indicated, the core 14 tends to pull the hair strands of the user radially inwardly as the core rotates. This results from the tendency of the bristles 18 to flex downwardly as the core rotates. However, the dividers 20 tend to project the hair strands of the user radially outwardly as the dividers rotate. This interrelationship between the core 14 and the dividers 20
15 tends to provide an optimal operation of the brush 10 in brushing the user's hair as the core and the dividers rotate. For example, this relationship prevents the user's hair from becoming entangled in the brush 10 as the brush rotates.

5 The end cap 39 and the collar 32 at the outer end of the brush 10 also are instrumental in preventing the user's hair strands from becoming entangled in the brush 10 as the brush rotates. This results from the peripheral configurations of the end cap 40 and the collar 32 corresponding to the peripheral configurations of the dividers 20 and from the concave configurations of the end cap and the collar in the positions between the dividers. This configuration causes the ends of the user's hair strands to extend radially outwardly from the core 10 as the brush 10 rotates.

10 The cratered configuration of the handle 50 at the positions adjacent the core 14 and the dividers 20 is also instrumental in preventing the user's hair strands from becoming entangled in the brush as the brush rotates. This results in part from the fact that the cratered configuration 78 is smooth and concave and forms a seamless relationship with the core 14. Because of this, the user's hairs at the inner end of the brush 10 adjacent the handle 50 move inwardly into the cratered configuration 78 in a direction away from the core 14, thereby preventing the user's hair from becoming entangled in the brush 10.

15 The hair brush 10 of this invention also has other advantages. Especially when the user's hair is wet, brush rotation in the past has carried the outer ends of the hair around the brush 10. The outer ends of some of the user's hair strands have then been entangled in the hair brush. However, the dividers in the brush 10 of this invention have tended to smooth the outer

ends of the user's hair strands and to push the outer ends of the hair strands radially outwardly, thereby inhibiting the hair strands from becoming entangled.

The dividers 20 of this invention also retain heat. As hot air from a blow dryer (not shown) impinges upon the user's hair and the dividers, the divider becomes warm. The heat from the dividers 20 becomes transferred back to the user's hair even when the heat from the dryer is directed elsewhere. The dividers 20 could also be pre-heated by directing the heat from the blow dryer against the dividers before directing air from the blow dryer to the user's hair.

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The hair brush 10 of this invention also spreads the oil on each hair strand while smoothing and shaping the hair. Brushing the hair a number of times spreads the oil along the length of the hair strands while separating the hair strands and drawing the strands radially outwardly. The transfer of oil along the length each hair strand provides body and sheen to the hair strand. This enhances the appearance of the user's hair.

The support base 12 includes an opening 90 (Figures 8 and 11) for receiving the brush 10 so that the brush is disposed vertically in the opening. The support base has a converging configuration with progressive distances upwardly from the bottom of the support base. This provides the support base 12 with a stable disposition on a support surface.

Although this invention has been disclosed and illustrated with reference to particular embodiments, the principles involved are susceptible for use in numerous other embodiments which will be apparent to persons of ordinary skill in the art. The invention is, therefore, to be limited only as indicated by the scope of the claims.

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